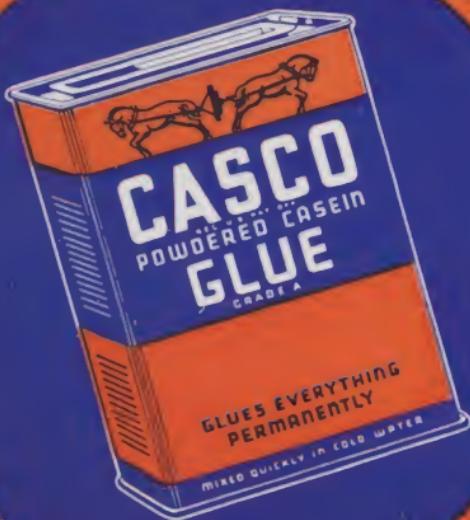


CASCO GLUING GUIDE

FOR
Better Gluing
IN
HOME
SHOP
and
SCHOOL

Also
HOW TO MAKE
CRACK-FILLER,
PAINT,
TILE CEMENT
and
MANY OTHER
REPAIR
SUGGESTIONS



THIS booklet tells all about CASCO Glue, and how to use it, based on the personal experiences of many satisfied woodworkers, craftsmen and householders. The editors know that new uses for this versatile adhesive are constantly being found. For any new use communicated and accepted as being suitable for publication the sum of \$5.00 will be paid. Correspondence should be directed to—



**Editor CASCO Gluing Guide
Casein Company of America
Division of The Borden Company
350 Madison Avenue
New York, N. Y.**



3rd Edition—Copyright 1938

**SEE BACK COVER FOR DETAILS OF CASCO
FREE PROJECT SERVICE FOR
HOMECRAFTERS**

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CASCO is a dry powder which, when mixed in cold water forms a liquid glue of great strength; which sets by chemical action and becomes highly resistant to moisture and heat. CASCO will bind firmly and permanently almost everything. One of the materials to be glued must be sufficiently absorbent to let the moisture in the liquid glue disperse.

TWO TYPES OF CASCO ARE AVAILABLE

**CASCO
GLUE (Grade A)**



Makes strong water-resistant joints on hard or soft wood; quick-setting, yet allows ample time for adjusting clamps.

**CASCO
No. 2 WHITE GLUE**



An easy brushing, stain-free glue for veneering and fine cabinet gluing. Remains liquid and usable for 3 days.

PACKING — PRICES

Trial Size	\$0.10	1 lb. Can.....	.65
4 oz. Can ("A" type only)25	5 lb. Can.....	2.75
8 oz. Can.....	.40	10 lb. Can.....	5.00
Large packages contain 25, 50, 100 and 300 lbs.			
1 lb. of dry CASCO makes 1½ to 2 quarts of liquid glue.			

CASCO Glue Brushes

Flat: ½ inch	15c	2 inch	45c
1 inch	30c	3 inch	55c
1½ inch	35c	4 inch	70c
6 inch		\$1.00	
Round: 1 inch	35c	Oval: ½ inch	20c

Sold by all Hardware, Paint and Building Supply dealers; also dealers in Manual Training and Homecraftsmen Supplies.

WARNING: CASCO Glue is sold only in original packages, identified by the trade-mark "CASCO" carrying complete directions for use. It is never sold loose from bulk containers, nor is it packed under any name other than CASCO.

OTHER CASCO PRODUCTS

CASCO Liquid Cement:—In 25c tubes. Flexible, Tough, Water-resistant, Non-inflammable; sticks to any surface permanently.

CASCO Wall Size:—In 1 lb. packages 30c. Saves time and paint on all interior paint work. For all wall surfaces; for use under all paints. Stops suction, improves bad wall conditions. 1 lb. covers 700 sq. ft. plaster; 400 sq. ft. fibreboard. Sold by all Paint, Building Supply and Hardware Stores.

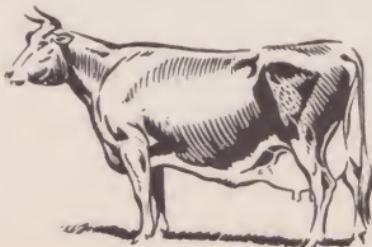
THE STORY OF CASCO

In the early days of the aeroplane, and during the World War, when planes were made entirely of wood and cloth, there developed great need for a glue that would withstand open air exposure. CASCO was produced as the answer to that need and millions of pounds were used in making plywood for wing coverings, engine bases, etc. It was natural that this remarkably durable glue should be adopted by industry, and it is now the standard article wherever good industrial gluing is done. In recent years CASCO has been made available for general use in convenient packages, sold everywhere by Hardware, Paint and Building Supply Stores.



WHAT IS CASCO?

CASCO is a casein glue. Casein comes from milk and is used industrially in making adhesives, sizings, paint, cements, plastics, etc. This is how casein is obtained from milk:—Cream is separated from milk in large creameries, leaving skim milk which is run into large vats and is either allowed to sour naturally, or the souring is speeded by the addition of a small quantity of dilute acid. The temperature of the skim milk is raised to about blood heat, and when this is done, the separation into curds and whey occurs quickly. The whey, which is valued by farmers for feeding purposes because it contains sugar of milk amongst other things, is run off and returned to the farmers. The curd, which is crude casein, is thoroughly washed in water several times and is then put into a press, which removes some of the water. The pressed curd is broken into small particles and the remaining water is removed in a drying apparatus. To make CASCO, the dry casein is ground and blended with casein from many sources, to obtain uniformity, and after a further treatment, there is mixed with it various chemicals which cause it to dissolve easily without lumping in cold water. After testing and packing, the world famous CASCO Glue is ready for shipment.



HOW TO MIX AND USE CASCO

Mixing CASCO

Follow directions on can. Use water at room temperature (50° to 70° F.). The correct water temperature is important because water below 50° F. requires a longer dissolving period and causes the glue to be thicker than normal. If water warmer than 70° F. is used, the dissolved glue will be thinner than normal and will start to thicken sooner.

Standard Proportions for CASCO Glue (Grade A) are 1 measure of glue powder to 1 measure of water. CASCO mixed in these proportions is suitable for general joint and veneer gluing.

A Heavy Mixture is prepared by using 1½ measures of glue powder to 1 measure of water. Mixed in these proportions, a super-strong, super-water-resistant CASCO is obtained, suitable for the most difficult gluing jobs. Use this *heavy* CASCO for badly fitting joints or when positive pressure cannot be applied while glue is setting; whenever highest water resistance is required and when quickest possible set is desired.

A Thin Mixture is prepared by mixing 1 measure of glue powder and 1 measure of water and then diluting with additional water. A *thin* mixture is suitable for light gluing work: paper, cardboard, etc.

Quick Dissolving

Recent improvements in CASCO provide quicker dissolving plus freer flow. CASCO is mixed in a moment and in ten minutes is ready for use. There is no cooking or heating. Exact directions are on each package.

Mix Daily as Required—Liquid Life

CASCO Glue (Grade A), when mixed in *Standard Proportions*, thickens several hours after mixing. It sets into a rubbery condition and cannot be again dissolved. This is the chemical action which makes a CASCO-glued joint highly water-resistant.

CASCO No. 2 White Glue mixed as directed stays liquid and at full strength for 3 days.

Applying CASCO

Clean, smooth, well-fitting surfaces are essential. In repair work, all old glue should be removed. A thin film of CASCO is applied to each side of the glue joint. *Allow a few minutes for glue to become "tacky" before pressing.* This prevents the liquid glue being squeezed out before it has had time to get a grip on the wood.

Pressing

In order of preference, these methods of applying pressure while glue is setting, are recommended:—Clamps—Screws—Nails—Weights. Where only hand pressure can be applied, use a *heavy* CASCO solution. Minimum pressure by clamps:—For softwoods—1 hour. For hardwoods—2 hours. It is best to keep thick wood under pressure overnight. Remember that a thin watery glue gives weak joints. Use a heavy bodied glue for hardwoods and difficult jobs.

Various means of applying pressure on individual jobs are explained in the articles dealing with specific uses.

Working CASCO Glue Joints

Softwood joints may be put under strain within 4 hrs. after gluing, but it is better to let them set overnight. Hardwood joints should always set overnight before working.

Testing CASCO Glue Joints

A CASCO glue joint develops its full strength 7 days after gluing. Do not test for water-resistance until the joint has seasoned for 7 days.

COMMON QUESTIONS AND ANSWERS ABOUT CASCO

How does CASCO compare with liquid glue?

It makes a stronger bond, which is also highly water-resistant. Sets quicker. Good results can be obtained without using clamps. Proportions of CASCO can be varied to suit the work.

How does CASCO compare with animal glue?

Animal glue has to be heated to dissolve and must be used hot. CASCO is mixed and used cold. Animal glue varies widely in quality—the best grades, when properly used make a wood joint as strong as CASCO, but lack the water-resistant quality of CASCO. CASCO is more quickly prepared; used indoors or outside; joints do not chill before pressing.

How far does CASCO spread?

One pound of dry CASCO will cover from 40 to 50 sq. ft.

What is the best way of spreading CASCO?

CASCO can be applied to small surfaces with finger, stick, etc. For large surfaces, a stiff brush should be used. Special CASCO Glue brushes are sold—see page 3.

How is dry CASCO removed from brushes, clothes, wood, etc.?

CASCO Glue once set is insoluble, but it softens when thoroughly wetted. Excess glue squeezed out of joints, etc., should be scraped off before it becomes hard. Dry glue on clothes, etc., can be removed with a rough cloth after it has been thoroughly wetted. It should be removed as soon as possible. Brushes should be thoroughly washed out after use and allowed to dry. If glue has dried hard, let soak in cold water overnight.

How should CASCO be used for best results?

Following pages give detailed information, but, briefly; mix in water at room temperature, about 70°; and after applying CASCO to the surfaces to be joined, allow a few minutes for glue to become "tacky" before pressing.

How long will CASCO keep?

If the CASCO package is kept tightly closed in a dry but cool place, the glue powder keeps at full strength for 3 to 5 years. It should not be exposed to extremes of heat or moisture.

After long storage CASCO glue powder may become slow dissolving; as long as 30 minutes waiting after initial mixing may be necessary before it begins to dissolve. However, even if CASCO is slow to dissolve, it is at full strength once it becomes fluid and smooth.

Occasionally, due to too long, or improper storage, the CASCO glue powder will not dissolve—when mixed as called for in the directions it remains undissolved, grainy, like sand. If for any reason this condition should exist, mail the package direct to the manufacturer, stating when and where purchased, and it will be replaced, free of charge.

"WATER RESISTANCE OF CASCO"

A properly constructed CASCO-glued joint will withstand unusual exposure to moisture, but is not guaranteed to hold indefinitely under conditions of complete moisture saturation. A film of CASCO becomes insoluble, hence heat and water-resistant, but it does not form a lacquer-like surface which sheds water. It softens under prolonged water soaking but regains its strength on drying out. It is generally recognized that the standard of water resistance for casein glue is set by U. S. Navy Specification No. 52G8b and U. S. Army Specification No. 3-152-A. CASCO Grade "A" Glue complies with these Government Specifications.

GLUING SUGGESTIONS

Suit the Glue to the Work

CASCO, unlike a liquid glue, may be mixed to suit the job. Always start with *standard* proportions, as printed on package. If the work to be glued is a normal type with well-fitting joints or veneers, use in those proportions. If pressure by means of clamps cannot be applied and therefore a super-strong, quick-setting glue is desired, use a *heavy* mixture. If the gluing job is easy, like gluing cardboard, paper, smooth soft wood, a thinner than normal mixture may be used.

Gluing End Wood, Mitred Joints, Etc.

Strong end wood joints are always difficult to make. To secure best results a perfect fit is essential. The end grain should first be sized with a *thin* CASCO solution. Let the sizing film dry (30 minutes or more), then apply a film of *heavy* glue solution. Let stand on the parts 5 minutes until "tacky," then clamp.

In many cases, end grain gluing can be avoided by using a "scarf" joint (see illustration).

Gluing Oily Woods

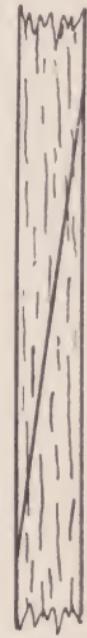
Teak, satin wood, lignum vitae, Osage orange, etc., are apt to be very oily; nevertheless a good gluing job can be done with CASCO by following the suggestions on Page 15. "Archery."

To Speed Set of CASCO

Instead of mixing 1 measure of CASCO glue powder in 1 measure cold water, use only $\frac{1}{2}$ measure water. Mix into a thick paste, let stand 15 minutes, then mix into the paste slowly about $\frac{1}{4}$ measure alcohol or acetone. This will thin the glue to about normal consistency. It will be very quick setting. More alcohol or acetone will make a thin, penetrating, strong glue suited to special needs.

Coloring CASCO

CASCO solutions can be brought to any desired color with a water soluble dye or alkali-proof dry earth color, obtainable at hardware or paint stores. Frequently CASCO can be colored to match the wood on which it is being used by mixing with it some fine sawdust made from that wood.



HOUSEHOLD REPAIRS

For general household repairs mix CASCO in *standard* proportions. Always remove old glue, paint, varnish, etc. Joints should fit tightly. If possible, apply pressure for at least 2 hours while glue is setting. Where joints are loose and badly fitting, and when pressure cannot be applied, use a *heavy* mix of CASCO.

"I used CASCO Glue to mend broken-down chairs and a loose wooden bed. The bed was loose in every joint but after using CASCO Glue I was able to use it the next night. Every joint was tight like a new bed."

—B.S., Ripon, Calif.



"I used CASCO on a toilet seat which had come unglued. I used no clamps but held it firmly together with my hands for a short time, then cleaned the varnished surface before it hardened. You would not know that the seat had been glued. It is absolutely solid."—F.P.O., Meriden, Conn.

"A leaking sink trap can be easily repaired if a cloth about 2" wide and 12" or 14" long is soaked in CASCO and wrapped around the leaking part. It is strong and water-resistant."—F. S., Sharon, Pa.

When gluing dowels, chair rungs, etc., which do not fit perfectly, thin the *standard* CASCO mixture with 1 measure of water, apply, let dry; then apply a film of *heavy* glue solution, let stand on the parts 5 minutes until "tacky," then press together. If dowel holes, chair rungs, etc., fit badly, partly fill with CASCO Crack Filler (see page 23) until a tight fit is obtained. Let Filler dry, then glue parts together in usual way.

The illustration shows an easy method of holding chair legs and rungs together while glue is setting. For details see page 5. "Applying CASCO" and "Pressing."



CEMENTING LINOLEUM

CASCO mixed in *standard* proportions provides a low cost water-resistant linoleum cement. CASCO holds linoleum tight around radiators, windows, doors, etc. Water used for cleaning floors will not loosen CASCO glued linoleum at the edges or seams.

In cementing small surfaces or making repairs apply a thin film of CASCO by brush to both the linoleum and the surface

to be covered. Apply pressure by clamps or weights for 2 or 3 hours; overnight, if possible.

When cementing large areas apply a generous film of CASCO to the surface which is to be covered. Lay the linoleum in place. Then weight down the entire area with boards or bags, or use weights to hold down such portions as do not lie flat. Keep under pressure 2 or 3 hours; overnight, if possible.



"Two years ago I covered my office floors with the best inlaid linoleum. Constant washing separated the joints. No matter what kind of glue was used they soon separated again after mopping. Over three months ago I used CASCO Glue, weighted the linoleum down over Sunday. Now try and separate it. Water won't."—L. P. B., St. Paul, Minn.

CLOTHING REPAIRS

CASCO mixed in *standard* proportions can be used to patch overalls and working clothes, also to glue fur and other materials which cannot be held by sewing.



"My son age 3 is continually falling down and tearing the knees out of his overalls and stockings. Finally in despair I took some patches from the finest leather I could find, stuck them on his overalls with CASCO Glue. Have washed them in my washer and ironed them for some time. Still the patch sticks. Thanks to your glue. It sure saves me work and money."—W. A., Hornell, N. Y.

"I used CASCO to glue a child's fur coat. The coat was torn and sewing did not hold. CASCO made a nice smooth job and is sticking."—F. U. J., Silver Lake, Kansas.

SHOE REPAIRS

CASCO mixed in *standard* proportions can be used for shoe repairs. If pressure cannot be applied while glue is setting, spread a film of CASCO onto the parts which are to be glued; wait until glue is tacky, then hold surfaces together tightly for a few minutes.

"The leather covering on the heel of my wife's shoe came loose from the wooden heel. I tried other glues and cements but none of them would hold the wood and leather together until I tried CASCO. Now it is fixed as firmly as if the two materials were one."—W. B. McC., Lewistown, Pa.



HANDLE REPAIRS

CASCO mixed in *heavy* proportions will cement wood and composition handles and ferrules of umbrellas, shaving or paint brushes, etc., in place. If the parts do not fit tightly a fibrous filler should be mixed into the liquid CASCO. (See Tile Cement, Page 23, also Crack Filler, Page 23.)



"I used CASCO Glue to stick an umbrella handle that had come off the iron shaft. I had tried a dozen different brands of glue first. Now it is on to stay no matter how hard it rains."—S. E. J., Indianapolis, Ind.

RE-COVERING TABLE TOP

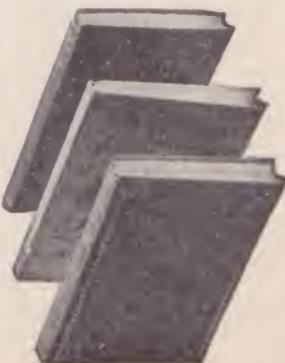
CASCO mixed in *standard* proportions will fill a wooden surface. One or more coats can be applied, allowed to dry, and sanded. This will give a smooth surface to which a covering of oilcloth or linoleum can be glued with CASCO.

"Having a wooden kitchen table top to be covered with a durable and water-resistant covering, we first filled the wood with a coating of CASCO. When dry, this was sanded, then another liberal coat put on. We quickly spread a piece of oilcloth over this and ironed it to the top with a pad. The result was a tight and firm top comparable in many ways to a porcelain top, but less expensive."—J. C. P., Port Jefferson, N. Y.



BOOKBINDING

To rebind a book that has become loose and wobbly in the back, open one of the covers and cut along the hinge inside so the cover and back can be laid out flat. Then apply a generous coating of CASCO (mixed in *standard* proportions) over the old glue where the book is sewn together and on the inside of the cloth of the back. Next replace the back and cover and put the book under a weight to dry for twenty-four hours. When it is dry, open the same cover as before and reinforce the hinge you have cut by applying a coat of CASCO and pasting in a strip of thin cloth or tough paper. The whole operation takes but five minutes.



MOUNTING PHOTOGRAPHS— MAPS, ETC.

CASCO mixed in *standard* proportions can be used for mounting photographs. Apply a very thin film of glue to the mount (not the photograph). The glue should be tacky and almost set before the print is applied. Prints glued with CASCO will not loosen. CASCO No. 2 White Glue is especially recommended.

Mr. L. C. Case of Tulsa, Oklahoma, writes:
“Our map department recently started attaching maps to thin aluminum plates, rather than boards, in order to save filing space. A great deal of trouble was experienced with adhesives before CASCO was tried. This remarkable glue was found to adhere exceptionally well to the polished aluminum surface, but soaked through and faded out the lines of the maps. I reasoned that CASCO is best suited as an adhesive on an aluminum surface since, being alkaline, it attacks the aluminum slightly. Only the fading must be solved. This was done by mixing 1½ measure of water to 1 of CASCO and spreading thinly on the aluminum surface. It was allowed to dry for a short time, 2 to 4 minutes, then the map was rolled on evenly with a hand roller. The effect was perfect, no fading or wrinkling. The old maps are periodically taken off the aluminum plates and new ones applied with CASCO. Before the correct adhesive was found the plates were first painted. This added time and expense is now unnecessary since CASCO does the job.”

Mr. Case used CASCO Glue (Grade A). We would recommend that if it is available, CASCO No. 2 White Glue be used, 2 measures water to 1 measure CASCO.

GLUING IMITATION LEATHER

CASCO mixed in *standard* proportions will hold imitation leather to either wood, fibreboard, or metal. A thin film of CASCO should be spread and, if possible, pressure should be applied while glue is setting.

“After trying three popular brands of liquid glue without success in applying imitation leather to tool cases I was advised that only hot glue would work. I tested the sample of CASCO on this job and even after being wet the fabric still clings tightly.”—C. C. H., Buffalo, N. Y.



OUTDOOR REPAIRS

CASCO, being water-resistant, can be used for outdoor as well as indoor repairs. Always use *heavy* mix. The glued joints continually exposed should be thoroughly protected with oil paint or other waterproof finish.



"I've used CASCO to glue rungs in canvas steamer chairs and other furniture which saw service outside in all kinds of weather and it is water-resistant because the glue hasn't loosened in a year of wear."—S. B., St. Louis, Mo.

"I have used CASCO in setting pieces of round sticks on a ladder and other wood work. The ladder is very solid and holds better than it would if you nailed the spokes."—J. F., Buffalo, N. Y.

MODEL COACH BUILDING

CASCO mixed in *standard* proportions holds permanently the many small glue joints in model coachwork. Pressure on small joints is not necessary, provided they fit closely.

"I have tried for some months to glue model coach wheels together so that when I re-chuck them they will hold. CASCO is the first glue that has done the job. Other glues broke when put under a little strain, but CASCO gave and then came back in place again."—G. F., Chicago Heights, Ill.



MUSICAL INSTRUMENT REPAIRS

CASCO mixed in *standard* proportions will repair violins, drums, piano keys, etc. Joints should be clamped if possible.

"As our climate is very moist we cannot keep the ivories on the keyboard of the piano, they loosen up when used. We tried everything. Nothing helped till we tried CASCO. It sure is fine."—F. W. W., Lutz, Fla.

"I had a drum which was cracked. I got CASCO Glue and placed it in the crack and applied a slight pressure. Next morning you couldn't tell it was ever cracked. I use the drum yet and it holds like iron."—M. J. Y., Summit Hill, Pa.



CASCO STOPS SQUEAKING FLOORS

Mr. Gower of South Williamsport, Penna., reports that he has stopped floors squeaking by making a liberal application of a *thinned* solution of CASCO (Grade A) Glue along the cracks.

For this work, we recommend first making a *standard* mix and then thinning with another measure of water.

MODEL BOATS

CASCO mixed in *standard* proportions is widely used in the making of model boats and ship models. Because model boats are put in direct contact with water, the joints should fit perfectly and should be clamped while the glue is setting. Glue squeezed out of the joints should be removed before paint or varnish is applied (see page 23, CASCO Crack Filler in Model Boat Work).

"I used CASCO Glue on the construction of my model boat. I strengthened the joints of the frame and filled all the cracks in the hull making the boat water-resistant as the Glue did not soften from water. Therefore, I recommend CASCO Glue to model workers who are making model boats."—I. K., New York, N. Y.



BOATS

A *standard* CASCO solution should be used for the gluing of all joints in boat construction; also for making built-up spars and masts. All joints should be clamped while the glue is setting. All linoleum should be cemented with CASCO (see Linoleum Cement, page 8). Canvas decking should be sized and glued with CASCO (see Canoe Repairs, page 14).



"I used CASCO Glue between the two layers of planking on a twenty-six foot boat. The first or diagonal planking I applied CASCO Glue and then screwed it down until all of the excess glue had been forced out. I found that it was better than the ordinary marine glue made for that purpose because it did not soften up in the sun and run out. In short, it had all of the advantages of other glues but none of their defects."

"After the boat had been in the water a short while it became necessary to remove one of the planks. We removed all the screws and still the glue held so well that it was necessary to split the plank to get it off."

"The CASCO Glue for the job cost only a fraction of what a marine glue would have and also it took less time to apply."—G. N. H., New York, N. Y.

"I used CASCO Glue for gluing together the bottom, battens and chines of outboard racing hull. I have used the hull with a 16 H.P. motor and it has not leaked or come apart."—M. H., Moonachie, N. J.

REPAIRING LEAKING BOAT OR CANOE

We are indebted to Reverend Mark G. Paulsen, Sault Ste Marie, Mich., for the following:

"Place the dry boat in the water, marking the leaky spots. Scrape the paint off these places and cover liberally with a piece of 8 oz. canvas. Cover both the wood and canvas with CASCO pressing the canvas on to work out the air bubbles; then copper tack about $\frac{3}{4}$ " apart. When dry apply 2 or 3 coats of paint. To lengthen the life of a very old and leaky boat with very little expense, cover the bottom completely to above the water line."

A standard mix of CASCO should be used.



CANVASING A BOAT OR CANOE

We are indebted to Mr. R. O. Buck, Chicago, Illinois, for the following:

"Soak canvas in water, wring out excess water thoroughly. Mix CASCO Glue in regular proportions (1 measure dry glue powder to 1 measure cold water). Apply CASCO liberally to both planking and canvas, and stretch into place, making close contact over entire area. Set to dry 48 hours. Apply protective coats in the following order: 1 Coat Shellac, 1 Coat of Lead and Oil, 2 Coats of Paint, 2 Coats of Spar Varnish."

This method has proved satisfactory in actual practise and the job has stood up perfectly for two years.



FISHING RODS

Because CASCO, when set, is water-resistant it can safely be used in making fishing rods. CASCO mixed in standard proportions should be used. The bamboo sections should fit perfectly. Pressure while glue is setting can best be applied by winding a stout cord tightly along entire length of rod.

"I have made several new fishing rods from split bamboo and used CASCO Glue with highly satisfactory results. I tried other glues, without success—as waterproofing was absolutely necessary."—P. L. K., Oakland, Cal.



ARCHERY

How To Make Arrows

Footed arrows may be made by using a piece of very hard wood as a footing and a softer wood for the shaft proper, gluing a piece of horn, fiber, or hardwood in place for a nock.

The joint between the two pieces of wood is of the type commonly called "fishtail." It is made by making a saw cut longitudinally about 5" down the center of the hardwood footing. The shaft should then be tapered, smeared with glue and forced into the cut in the hardwood.

An easy way to feather arrows is to smear some glue on a pane of glass, set the feathers, (already cut and stripped) in the glue. Then, taking the arrow in the left hand, put each feather in place on the shaft with the right hand. No further attention should be necessary.

In the above instructions, use *standard mix*.

Making and Repairing Bows

Bows are usually laminated and consist of lemonwood, Osage orange, yew, etc., glued together. Osage orange is a very oily wood and therefore difficult to glue. It can be glued satisfactory if the surface is sponged with a dilute caustic soda solution an hour or two before gluing. A strong solution of any household cleaning compound can take the place of caustic soda.

In the manufacture and repair of bows, a *standard CASCO* solution should be used and the joints should be clamped while the glue is setting.

"While shooting with my 40 pound pull Bow and Arrows, I pulled the bow a little too much. The strain was too great and it broke in a long splinter about 20 inches long. I used a little CASCO Glue to repair my Bow and it saved me near to fifteen dollars to get another Bow like it."—A. R., New Haven, Conn.



BICYCLE TIRE CEMENT

"I wanted to glue my bicycle tires to the rims. After using several different glues that did not hold, I heard of CASCO Glue. I used a *heavy* mixture of CASCO and spread it upon both tire and rim. I let it stand over night and was able to ride the bicycle the next day. I've been using the bicycle six months now and the tires have stood many hard tests, but the tires and rims are not separated a bit. It is almost impossible to take the tire off the rim."

—H. M., Erie, Penna.



HOW TO BUILD A TOBOGGAN

We are indebted to Mr. J. H. Ehrick, Head Manual Training Dept., Reeder Special Dist. No. 3, Reeder, N. D., for the following:

"Two years ago this winter in the Manual Training Dept. of the Reeder High School, of which I am the Instructor, a toboggan was made by gluing four inch strips of hickory together, using CASCO Glue and wood dowels. After the toboggan had been glued up, it was left to set in steel clamps for 48 hours. After being allowed to dry for a week, one end of it was immersed in boiling hot water for 45 minutes, so that it could be bent. The toboggan has given constant service each winter since then, and still is in good condition. It is kept in shape by being given a coat or two of varnish every year."



REPAIRING SPORT EQUIPMENT

Golf clubs, tennis rackets, skis, hockey sticks, gunstocks, etc., frequently are broken, but they can be made as good as new with CASCO. Apply a film of *heavy* CASCO solution to each side of the joint. Clamp the broken parts together while glue is setting.

When skis are purchased, they are separated from the rubber footpads which have to be either tacked or screwed to the skis. Many people have found it better to use CASCO for this purpose—it makes a firm flat union with the wood without the objectionable marring by the tacks.



"A friend had a pair of very fine and expensive skis which he prized very highly. Accidentally he broke one square off. I glued it with CASCO and now it is good as ever and in service."—G. B. V., Chama, N. M.

"I use only CASCO in repairing and building ice hockey sticks with a half and half joint so the grain runs straight."—F. G. C., Allenwood, Pa.

"I put CASCO to a severe test. I had to repair a broken gunstock and made a first class job. It is stronger now than when new."—C. F. deA., Lancaster, Pa.

"I broke a golf club but it was soon remedied with CASCO."—H. A., Elmira, N. Y.



MAKING A LAMINATED SPRINGBOARD

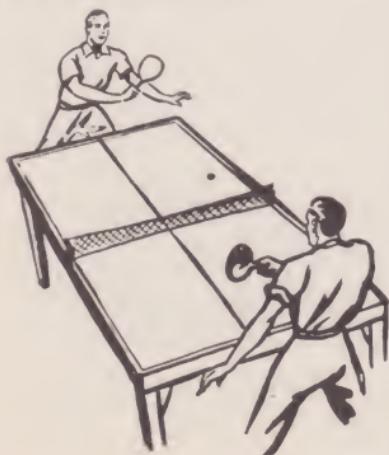
After having several springboards of solid lumber break, a CASCO user secured 3 Oregon Fir boards 1 x 12 x 16 ft. long and glued them together. After giving the glue 2 days to dry thoroughly, the springboard was put in place and lasted through the season.



This is a typical example of laminated construction. The three 1" boards glued together with CASCO are very much stronger than one 3" board. The gluing should be done with a *standard* mixture of CASCO. Apply glue to both sides of each joint. A heavy construction of this type should if possible, be clamped so it will receive positive pressure all over the surface while the glue is setting. Lacking clamps, pressure may be applied by wedges. Maintain pressure overnight; allow 2 days for seasoning.

COVERING TABLE TENNIS TOPS FOR FASTER GAMES

Most tables are of fir plywood which, due to its pronounced grain, is never perfectly smooth. A smooth and faster playing surface is obtained by covering with muslin, using CASCO, as follows:—



Secure enough medium weight unbleached muslin to cover table. Mix CASCO (Grade A) Glue in thin proportions, and apply generous coat over table surface. Place cloth—dry, not wetted—in place; smooth out carefully; stretch and take a folded-over edge every 2" with No. 3 tacks while glue is still wet. When dry, apply a coat of *thinned* CASCO (a standard mix, thinned with an equal volume of additional water), and scrape it into the cloth thoroughly with a 3" paint scraper. When dry, sand lightly with 00 sandpaper and apply two coats of enamel, sanding between coats.

A table covered as directed gives an evener and faster ball.

This same method may be used for covering surfboards, or almost any surface.

AIRPLANES AND GLIDERS

CASCO Glue is used by the United States Government and airplane manufacturers. Mix in *standard* proportions. A thin film should be applied to each surface and all joints should be clamped for 4 hours or longer while the glue is setting. Small joints which cannot be clamped should be glued with a *heavy* CASCO Glue solution and the film allowed to get tacky before being pressed together.

A CASCO user points out that he reglued the damaged wings of an airplane in Alaska with CASCO while the temperature of the workshop was below freezing. Ordinary glues could not have been used, but even at this abnormal gluing temperature the efficiency of CASCO was not seriously affected. The pressure period, of course, had to be doubled because of slower setting.

"We used CASCO Glue exclusively in the constructing of our primary glider. It is now about one year old, and we have had better than 700 flights. In all this wear and tear not a single joint has pulled loose."—A. L. W., Jr., Lakewood, O.

AUTOMOBILE USES

A *standard* CASCO solution should be used for all automotive repairs; linoleum or rubber to wood running boards; mats to floor boards; leather fabrics or upholstery material; gasket cement; roof repairs, etc.

Screws, bolts, hinges, etc. coated with CASCO Glue will hold firmly and minimize squeaks and rattles.

Various automotive uses of CASCO Glue are given in the following examples:

"CASCO Glue is the best material that has come to my attention for the work required by this organization which is charged with the repair of approximately 400 motor vehicles. It will adhere to almost any surface, even glass; works very well on wood and fabric, such as leather, imitation leather and other material used for the upholstering of motor vehicles and repair of bodies. This glue can also be used as a gasket cement for cylinder heads and other machined surfaces requiring gaskets such as oil pans, water jackets, manifolds, et cetera, when gaskets fail to hold, due to warped surfaces."

—W. C. T., N. J.

"Recently after a thorough overhauling of the mechanical parts I decided to make another attempt to stop the squeaks. I procured a package of CASCO Glue and mixed it to a good flowing consistency and placed it in a common squirt oil can. With this I squirted glue into every crack, joint and crevice.



beneath every loose bolt head and nut, behind every door hinge, under edge of lining about the top, glued felt strips around rattling brake rods, wires and levers and between fenders and frame pushing the latter in with a table knife. The effect is more than one can believe. The car has been driven through mud and slush, through rain storms and zero weather but the squeaks and rattles have not yet returned."

—W. M., North Bend, Neb.

"I was troubled with a leaky roof top on my auto, where the fabric joins the metal. I stopped it by raising the bead, applying CASCO Glue and refastening." —T. D., Erie, Pa.

COVERING TRAILERS, TRUNKS, ETC.

In covering auto trailers, trunks, etc., with canvas, leather, imitation leather, etc., use CASCO Glue (Grade A). Make a *standard* mix and dilute with two additional measures of cold water. Apply one coat of this sizing solution to the wood or fibreboard; let dry several hours, or overnight. Apply a coat of *standard* mix of CASCO to the wood or fibreboard and let set until tacky. Then press the covering onto the tacky glue and roll into place.



GLUING CORK

Cork slabs, sheets of cork composition and similar materials can be glued to wood, metal, Bakelite and other surfaces with a *standard* mixture of CASCO. Clamping is not essential, providing the film of CASCO is allowed to get "tacky" before the materials are combined. Weights should be applied for two hours at least, or until glue is set.

INSECTICIDE

A thin solution of CASCO Glue can be sprayed, either alone or with the usual insecticides. A very small quantity of CASCO Glue improves the sticking of insecticides and makes them last longer when applied during moist or rainy weather. Mix 1 lb. of CASCO Glue Powder into a *standard* glue solution (1 measure glue powder to 1 measure water) and after the glue is dissolved, mix it into 10 gallons of water or regular insecticide spray.

CASCO Glue, mixed as above, is a recognized control of Red Spider. This pest and the recommended treatment is described by the Minnesota State Dept. of Agriculture as follows:—

INSECTICIDE—Continued

"Red Spiders when numerous, cause evergreen foliage to turn brown. The spiders may be observed easily with the aid of any small hand lens and usually can be seen without the aid of a lens. They may be recognized under a lens by their light yellow head and black body; also by the characteristic webbing which they produce and which is easily seen when the spiders are numerous.

"Spraying or dusting should be done as soon as the spiders appear, and if possible BEFORE the foliage turns brown. The eggs of the red spider hatch in 4 or 5 days and the young spiders become full grown in 7 to 8 days after hatching. Therefore, for the best results a second application of spray or dust should be given about 6 days after the first application in order to kill young spiders which may have hatched out since the first treatment and before they mature and commence egg laying."

NOTE: Avoid spraying in the middle of the day, as water alone at such times will sometimes result in injury by scalding.

WALL COVERINGS

While ordinary wallpaper paste does an adequate job on walls that are dry and are not subjected to moisture, a better adhesive is frequently required. CASCO is recommended for such conditions as the following:—

Improving Wallpaper Paste. The strength of ordinary wallpaper paste can be greatly increased, and the bond made water-resisting, by using $\frac{1}{2}$ lb. of dry CASCO Glue Powder to a pail of liquid paste. CASCO should be mixed in *standard* proportions, and when dissolved, stirred into the wallpaper paste. A CASCO strengthened paste should be used with extra heavy wallpaper and always when paper is to be hung on damp or stained walls.

Heavy Wall Coverings such as leather or fabric, which will not stick with ordinary paste, can be made to hold with CASCO. After mixing CASCO in *standard* proportions, add another measure of cold water, thus thinning the glue so that it can be spread easily by brush and at low cost.

How to Paper a Bathroom. It is perfectly safe to use any coating, such as varnish, lacquer or shellac over the surface of cloth, paper or any other material which has been glued to a wall with CASCO. In a bathroom or other place which is exposed to constant moisture, it will help to safeguard the water-resisting CASCO bond if an application of a waterproof varnish or lacquer is made to the surface of the wall covering material.

"I had a job of covering the walls of a private office with leather. It would not stick with ordinary pastes. After several attempts, I tried CASCO. It did the job perfectly. I found it easy to mix and apply and it set quickly."—J. G., Brooklyn, N. Y.

"I tried to tack an oilcloth splasher onto a rough plastered wall succeeding only in chipping the plaster. Later I tried CASCO Glue. The splasher is in place, to stay, and the credit belongs to CASCO."—R. S. B., St. Petersburg, Fla.



DAMP-PROOFING WALLS AND CLOTHES CLOSETS

Damp walls foster mildew which is fatal to gowns. Damp walls make clothes limp. Walls may be inexpensively damp-proofed with CASCO by applying a *thin* mixture of CASCO (Grade A); allowing that coat to dry, then making a second application. The second coat may be used to stick a wallpaper covering. Any paint may be applied over the CASCO treated walls. (Note: Old kalsomine, whitewash, or old wallpaper should be removed before damp-proofing).

SIZING CANVAS FOR PAINTING

We are indebted to Mr. Martin Linsey of Cleveland Heights, Ohio, for the following proven method of sizing canvas:—

First Coat Mix:—

2½	measures of	CASCO No. 2 White Glue
8	"	water
¾	"	glycerine
2	"	alcohol

The CASCO, water and glycerine are all mixed first and the alcohol added only when the size is to be applied. This coat is thoroughly dried (with moderate heat if necessary) before the second, or ground coat is applied. Sand first coat before applying second.

Second or Ground Coat Mix:—

2	measures of	CASCO No. 2 White Glue
1	"	powdered zinc white
6	"	water
3	"	milk
¾	"	glycerine
4	"	alcohol (which is to be added only immediately before application)

Sand this coat if a smooth painting surface is desired. The proportions given may, of course, be varied according to individual requirements. The use of milk is not essential, but is recommended, especially to make a ground for oil-painting.

TEMPERING PLASTER OF PARIS

CASCO is highly recommended for use with plaster of paris to retard its setting. It is very practical and only a small amount is required. Mix about one heaping teaspoonful of CASCO (Grade A) into about 2 lbs. of dry plaster of paris and then mix in water the usual way. Besides retarding the setting, it gives the plaster a stronger adhesion with practically no tendency to crumble when dry.

WATER-RESISTANT PAINT

Good water-resistant, non-dusting paint made with CASCO and inexpensive pigments obtainable from paint stores can be used for indoor or outdoor painting. Where possible use $\frac{1}{3}$ each of Whiting, China Clay and Lithopone, mixing them together and adding any suitable dry earth colors to produce shade desired. Mix in 10% to 15% of CASCO Glue (Grade A) (dry powder):

Take 1 measure of dry mix.

Add $\frac{1}{2}$ measure of cold water.

Stir rapidly until the dry material is thoroughly wetted and all lumps rubbed out.

Let stand 20 minutes.

Mix in thoroughly $\frac{1}{5}$ measure cold water.

The paint is now ready for use.

If too thick, it may be diluted carefully with more cold water to the desired consistency.

This inexpensive paint is also useful for decorating fibreboards, stage scenery, window displays, etc.

USING CASCO TO IMPROVE WHITEWASH OR KALSOMINE

The base of whitewash is hydrated lime, stocked by all building supply dealers. It is easily made into whitewash by mixing into cold water, and adding CASCO Glue, salt, calcium chloride or other easily obtainable materials to give certain qualities to the dried whitewash.

Where the recommended formulas call for "hard to get" chemicals such as casein and formaldehyde, use CASCO Glue (Grade A).

One half pound of CASCO (mixed in *standard* proportions), added to a large pail of plain lime whitewash or kalsomine, will add greatly to its non-rubbing qualities, water-resistance, bonding power and durability.



FOR COMPLETE WHITEWASH INFORMATION,
WRITE TO NATIONAL
LIME ASSOCIATION,
WASHINGTON, D. C. AND
ASK FOR FREE COPY OF
BULLETIN 304-C.

SAND FINISH WALL COATING

By painting on a coat of CASCO and then dusting quickly with white sand, an excellent exterior or interior house finish can be secured.

HOW TO MAKE WHITE TILE CEMENT

Mix thoroughly $2\frac{1}{2}$ parts by weight of dry CASCO with $7\frac{1}{2}$ parts by weight of Lithopone (obtain from paint store). If Lithopone cannot be obtained use Whiting. Take $1\frac{1}{4}$ measures of dry mixture and mix into it thoroughly $\frac{1}{2}$ measure cold water. Let stand 2 hours, stirring occasionally. It will form a smooth, heavy paste ready for use. The cement can be colored by mixing any dry earth color into the dry material.



"One of the tiles of the bathroom floor was loose and continually getting kicked out of place. I took out the loose tile, cleaned out all particles of dust and scraped cement from sides of the six adjacent tiles. I put CASCO in the hole and reset the piece of tile. It set firmly and was as easy as cementing two or three pieces of china together."—C. J. S., Dallas, Texas.

CASCO CRACK FILLER

To make Crack Filler with CASCO Glue as a binder the following materials are required:

CASCO Glue (Grade A)

Fine Sawdust (which has been put through flour sifter to remove coarse particles)

Ordinary Household Flour

Whiting

Alcohol (denatured or rubbing)

Mix CASCO Glue in *standard* proportions, i.e., 1 measure of glue powder to 1 measure of water; then, using the same measure, mix together: $1\frac{1}{2}$ measures Sawdust; $\frac{1}{2}$ measure Flour and $\frac{1}{2}$ measure Whiting.

Stir these mixed ingredients into the dissolved glue. When thoroughly mixed add $\frac{1}{4}$ measure of alcohol. Alcohol can be omitted if not available; it thins and smooths the filler and speeds drying.

Only enough filler should be mixed so that it will be used within 3 or 4 hours. CASCO Crack Filler sets quickly by chemical action.

Alkali-proof dye or dry earth pigment can be included to color the filler.

Advantages of CASCO Crack Filler:

Low Cost—Quickly and easily made, as required. No waste through hardening of material in can.

Adhesive—Will stick firmly to all materials.

Strong—Will not crumble after drying out.

CASCO CRACK FILLER USES

Filling Cracks, Knot Holes and Gouged Surfaces

Press CASCO Crack Filler firmly into place with fingers or putty knife and leave rounded above the surface until thoroughly dry. Then smooth off with chisel or plane and finish with sandpaper.

If blemish is deep, apply only a thin layer to sides and bottom of cavity and repeat when dry until surface is level. Finish off with plane and sandpaper.

- CASCO Crack Filler may be made to match the wood being repaired by using sawdust from the same kind of wood in the crack filler formula on page 23.

Forming Tool Handles

The CASCO Crack Filler formula on page 23 may be applied directly to screw drivers, chisels, etc. Handles so made are stronger than ordinary wood handles as there is no grain to split. They also fit tighter because of the slight shrinking of the crack filler as it sets.

Filling Rat or Mice Holes

"CASCO Glue can be used not only as a coating or paint for wood with sand or pulverized glass mixed into it to stop

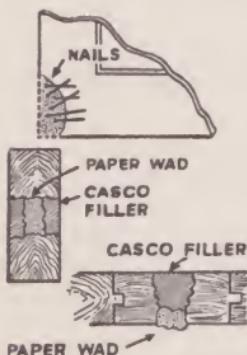
the gnawing of rats or mice but can, by making the mixture into a thick plastic, by using sawdust with sand, etc., be used for filling out parts which have been chewed away, such as the lower corner of a door. Little nails should be driven partly into the wood before applying the mixture. After the CASCO plastic has dried it can be trued up with a file or hone. Where holes have been chewed clear through, first put in a wad of paper, then fill with the CASCO plastic."

—E. H. C., Addison, N. Y.

Crack Filler in Model Boats

"I wondered if I could not find something that would stay put when I filled cracks and deep screw-head holes on a 78" model of a sail boat that I recently completed. I took CASCO, mixed it with fine sawdust, and used that. I defy anyone to find a crack filler to beat it. It stays where it is put, it does not crack or shrink and it sands down easily.

"This is a real need to model yacht builders."—C. O. B., Rensselaer, N. Y.



Takes Stain Perfectly

"Use CASCO to fill holes and cracks in wood and you notice it will stain perfectly and make a very hard finish." —

D. M., Worthington, Minn.



Making Cedar Chest

"I made a cedar lined chest by using cedar sawdust in your formula for crack filler. Made three light applications with trowel." — L. H. S., Lebanon, Pa.

CASCO IN BUILDING CONSTRUCTION

Because wood shrinks and swells with changes in moisture, nails and screws become loosened. As a result, in time, almost every wooden construction loses its original rigidity.

The remedy is to use CASCO Glue to reinforce nails, screws, and other wood fastenings. Here are some suggestions:—

House Building:—For exterior and interior sheathing, rigidity is secured by gluing and nailing plywood, fibreboard, or asbestos board to studs.

Interior partitions of plywood or fibreboard are glued and nailed to studs. Battens over joints are glued and nailed.

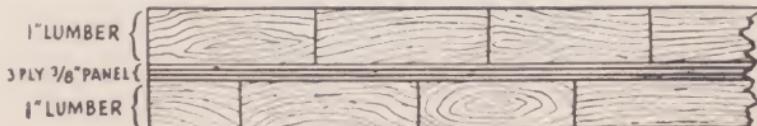
Door hinges and fasteners are made more secure by the use of CASCO and screws. CASCO makes a good bond between metal and wood.

Flush Doors:—The flush door is valued for its good appearance, rigidity, durability, and sound, wind and fire-resistance. Most commercial manufacturers glue their flush doors with CASCO.

How to Make an Outside (heavy) Flush Door

Here is a simple way of building a very strong flush door on the job, of any required size:—

Apply a standard mix of CASCO (Grade A) Glue to one side of a 3-ply $\frac{3}{8}$ " fir panel (which may consist of one or more pieces) of size of door. Screw one inch, properly planed, pine (or other desired wood), over that side. Then repeat the process on other side. The lumber may be square edged or tongued and grooved. Glue should be applied to the edge joints as they are fitted together. The comparatively slow set of CASCO makes it a simple matter to place and screw the planks in position before the glue is set.

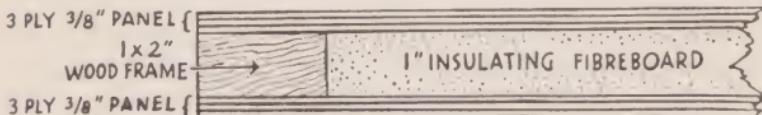


This door may be "V" jointed, glass may be let in, etc., as required.

How to Make a Light-Weight, Sound-Resistant Flush Door

Use a 3-ply $\frac{3}{8}$ " fir panel for one side; $\frac{1}{2}$ or 1" insulating fibreboard for centre, and another 3-ply $\frac{3}{8}$ " fir panel for the other side. Frame the fibreboard with 2" wide wood of $\frac{1}{2}$ or 1" thickness, letting in enough solid wood for lock.

Apply a *standard* mix of CASCO (Grade A) Glue to the inner side of each 3-ply panel, placing fibreboard and wood framing between the spread panels. Apply pressure by best means available. "C" clamps at edges (using a board between clamps and plywood to distribute pressure), and pressure over surface by weights or sandbags for at least four hours will be satisfactory. Be sure and apply a liberal spread of CASCO so that it will not dry into the absorbent fibreboard before the assembly is placed under pressure.



This makes a very satisfactory and most inexpensive flush door. It is of course, not necessary to use fir plywood. Any wood may be used, or pressed fibreboard, for the covering.

ERECTING AND FINISHING FIBREBOARDS

Fibreboards, whether of the open-fibred insulating type, or the compressed close-fibred types, can be erected with or without the use of nails, directly to studding, plaster, or other surfaces with CASCO (Grade A) Glue.

Procedure:—Use a *standard* mix of CASCO. For insulating board, scrape some fibre loose and mix it into the dissolved glue to make a heavy bodied mass.

Apply over surface of studs. On plaster or other wall surfaces, apply *heavy* mix in "blobs", one every 12 sq. inches. Nail boards in place, or, if it is preferred to avoid use of nails, apply pressure by shoring for one hour or longer.

The same method is recommended for installing acoustical tile on ceilings.

Filling Joints, Nail Holes, Etc.

Powder some of the fibreboard; then make *standard* mix of CASCO. Mix into the dissolved glue 1 additional measure of water. Then add enough of the CASCO to the fibre to moisten it; press into hole, allowing a surplus to make up for shrinkage. When dry, sand to a level surface.

Filling Joints, Nail Holes, Etc., with Swedish Putty

The following formula for Swedish Putty and method of use is recommended by Masonite Corporation:—

2 lbs. CASCO (Grade A) Glue

$\frac{1}{2}$ gal. cold Water

5 lbs. Bolted Whiting

$\frac{1}{2}$ pt. Lead and Oil ready-mixed outside paint, light color

$\frac{1}{2}$ pt. Spar Varnish

This is prepared as follows:

Mix CASCO into the water in usual way. Let stand until fully dissolved. Stir the whiting in slowly. Then mix in the paint and varnish.

Use as follows:—

Remove all loose fibre from around the joint, on the surface of the board, and apply a reasonably heavy coat of Swedish Putty over the joint, spreading it approximately 1½ in. to 2 in. on each side of the joint. Into this Swedish Putty firmly embed a 2 in. strip of buckram tape or wire cloth. The tape should be embedded in the Swedish Putty, using a painter's scraping tool or pointing trowel, forcing the putty through the tape. Bring the tape to intimate contact with the board, feather-edging the Swedish Putty along each side of the tape for approximately 1 in. to prevent the edges of the tape from showing through the finished surface. The surface of the tape should be made as smooth as possible, using additional putty if necessary. After the initial application, allow to stand until the joint is thoroughly dry and smooth up any uneven spots with a second application of Swedish Putty. Allow this to dry and smooth using a wood block and No. 1 sandpaper.

At the time the joint construction is prepared, the nail heads may also be covered with Swedish Putty. When dry, touch up with a second application of Swedish Putty if necessary and, when dry, sand to a smooth, even surface with No. 1 sandpaper.

Sizing and Painting Fibreboards

Much paint can be saved by sizing before painting. CASCO (Grade A) Glue or CASCO No. 2 White Glue are recommended. Also CASCO Wall SEALER (see page 3) which is especially made for sizing every kind of wall before painting.

Procedure:—Take a *standard* mix of CASCO and dilute with three additional measures of water. Up to 3 pounds of whitening or other inexpensive pigment may be mixed into a 1 pound mix, and thus a low cost size and ground secured.

One pound covers 200 to 400 sq. ft. of soft fibreboard; or up to 1000 sq. ft. of hard fibreboard.

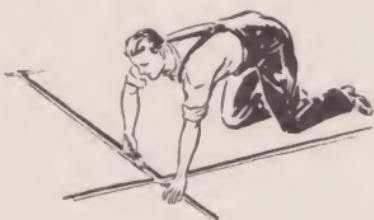
Apply with wide brush. Allow to dry before painting.

LEVELLING CONCRETE FLOORS WITH CASCO CRACK FILLER

Mr. P. K. Hunter of Leaburg, Oregon, had a concrete floor which was deeply scored along the construction joints. The grooves were cleaned with a wire brush, and three layers of CASCO Crack Filler were applied, several days being allowed for each layer to dry.

The floor is 3" thick over a 6" gravel fill, and is 6 to 12 inches above ground level. Water is spilled on it daily, and equipment is moved around.

It is reported that the CASCO Crack Filler treatment withstands wear and exposure satisfactorily, is of good appearance, and is easily cleaned.



PREVENTING STICKING OF WINDOWS AND DRAWERS



Mr. C. H. Fickbohm of Boonville, N. Y., reports the following method of using CASCO for this purpose. Care should be taken to see that windows and drawers are thoroughly dry before being given this treatment.

The sash is removed and cleaned well along the edges. A standard mix of CASCO (Grade A) Glue which has been mixed with a one-half measure of alcohol to thin it and increase penetration, is then applied in a very thin coat along the entire edge. After this is quite dry, a heavier coat is applied. When dry, it is smoothed lightly with fine sandpaper. Then the edges are rubbed lightly with a wax candle.

It is reported that after this treatment, windows move as if on ball bearings, even in the dampest weather.

The same procedure is followed with cabinet or dresser drawers.

STOPPING BELT SLIP WITH CASCO

Mr. C. C. Barkham, a flour miller of Ardmore Milling Company, Ardmore, Okla., reports this interesting factory use of CASCO:

The problem was to stop excessive slip without noticeable increase in pulley diameter. The pulley was cleaned of grease and dirt, following which a coat of a *standard* mix of CASCO (Grade A) Glue was applied. In a minute or two, when the film of CASCO was slightly tacky, a strip of cotton cloth (cheese cloth, 40 threads one way and 32 the other) one inch wider than the pulley, was applied, and all wrinkles carefully smoothed out. It was wrapped so that the pull of the belt tended to smooth the end down. The glue was now thinned with water, and with it, four more cloth layers were applied, the last layer without glue applied to the face. Using full strength CASCO, the edges were folded and glued around the edge of the rim.

Another similar job done by Mr. Barkham was to put a new crown on the worn face of the pulley of a 100 h.p. motor. On this pulley, first a full width layer was glued, followed by ten progressively narrower strips. Then five plies, full width plus a margin for gluing to the sides and inner edges of the pulley were applied. On a multiple coating job, a little (about 10 to 25%) acetone or alcohol mixed into the dissolved CASCO will speed setting and drying.

Because of the strength, heat resistance and durability of CASCO, it is probably the only adhesive that could be used for work of this kind.



ANOTHER METHOD OF STOPPING BELT SLIP

We cannot do better than quote from a letter received from Mr. Whitehill of Los Gatos, California, telling his method of stopping belt slip:

ANOTHER METHOD OF STOPPING BELT SLIP—(Continued)

"A common observance where pulleys are utilized in power transmission is the slick polish which the pulley faces acquire from belt slippage. This often accounts for a loss of power of 50% and in attempting to correct the condition belt tension is carried too high, causing rapid wear on the bearings.

The cure for this dilemma is to face the pulleys with a heavy grade of canvas but to do this requires an adhesive with ability to combat moisture and heat and provide a strong bond between the canvas and metal. CASCO Glue has solved the problem for me for this purpose and has supplanted all the formulas I have previously used.

The process is:

- 1—Wipe the face of the pulley thoroughly with a salt and water solution and allow the wet pulley to stand overnight to corrode.
- 2—Cut a strip of canvas somewhat wider than the pulley.
- 3—Mix a *standard* mix of CASCO (Grade A) Glue according to directions. Spread on pulley with a brush, then paint the strip with the glue and join the surfaces. Glue a strip of gauze over the seam and bind in position with a flat strap or cord under slight tension.

In 24 hours remove binding strip, trim the canvas edges with a safety razor blade and you will have a pulley which will deliver its full quota of power without fuss or worry."

TREE GRAFTING

Mr. M. Spangler of Galloway, Ohio, claims that there is nothing better than CASCO as a cement for tree grafting. He cuts and trims the graft in the usual way, ties the joint with a strong cord, and then applies a *standard* mix of CASCO (Grade A) Glue all around the joint. It is said to keep out rain, air, and insects and strengthen the joint.

This unique use of CASCO is interesting; and we would recommend a heavy glue solution; and also suggest CASCO Crack Filler whenever the joint does not fit closely.



VENEERING

CASCO makes veneering easy and practical because CASCO is mixed with cold water and is applied cold to cold lumber at ordinary room or shop temperatures. No heating of glue, lumber or caul-boards is required.

CASCO No. 2 White Glue is especially recommended for veneering because it is applied easily and quickly by brush and sets slowly, thus allowing ample time to spread several panels and get the veneers in their proper positions before applying pressure. CASCO No. 2 White Glue is a special formula which has little tendency to penetrate through and stain the faces of fancy veneers.

The standard mixture of CASCO No. 2 White Glue (1 measure of glue powder to 1½ measures of cold water) is satisfactory for most veneering. Exceptionally thin or especially porous veneers should be glued with a heavier solution of CASCO No. 2 White Glue prepared by mixing 1 measure of glue powder into 1¼ measures of water.

CASCO Glue Brushes should be used for spreading CASCO in veneering because, being stiff, a thin, even spread is obtained. When gluing three-ply panels, always apply the glue to the core and not the veneer. In gluing five-ply panels, apply glue to one side of the core, lay the crossband in place on the glue-coated surface, then apply glue to the crossband, after which the face veneer should be laid in place, the panel turned over and the operation repeated on the other side. This method aids in preventing stain and checking of fancy veneers.

The period from the time the first glue is spread until the time pressure is actually applied should never exceed 20 minutes and should preferably be not over 15 minutes. Two or three layers of absorbent paper, such as old newspapers, should be placed against the face of fancy veneers. The paper absorbs the glue forced through the openings in the veneer or around the edges, and also helps to prevent glue stain by absorbing glue moisture.

It is not necessary to exert great pressure on veneer panels. Hand screw presses should be tightened by hand only. Do not use extension handles. Excessive pressure causes glue stain.

CASCO sets quickly compared with other glues and panels may be released from pressure after 5 to 6 hours, but may remain under pressure overnight when convenient. Thin veneers, inclined to stain, should be released after 3 or 4 hours. Panels, when removed from pressure, should be placed on strips ½ inch or more in thickness and spaced every 12

inches for 48 to 72 hours so glue moisture is dispersed and the panels stabilized at normal moisture content.

If glue stain occurs, it can be removed by sponging with a solution prepared by dissolving 1 oz. oxalic acid crystals (obtainable at drug stores) in 10 oz. hot water. After sponging the stain out with this solution, it is advisable to remove any trace of oxalic acid by sponging the surface with water.

Sizing Veneers Before Gluing

Veneer, especially thin crotch and burl, is often brittle and hard to handle when dry. It may be made strong and flexible by treating as follows:

CASCO No. 2 White Glue	1 Measure
Dissolved in cold water	1½ "
Add slowly alcohol	2 "
Add slowly glycerine	1 "

The alcohol is used to speed drying and minimize expansion. The glycerine is used for flexibility. More or less may be used according to brittleness of veneer, dryness of climate or conditions of use.

The solution may be used cold or warm. Quantities unused may be kept for several days in closed container. Immerse the veneer in the solution, or brush it onto each side of the veneer; let excess drain off; then dry slowly between warm, absorbent boards.

CASCO does not "burn through" or in any way adversely affect ordinary furniture finishes applied over it; in fact a thin solution of CASCO No. 2 White Glue prepared by diluting the standard mixture with two additional measures of cold water makes a satisfactory undercoater preparatory to the application of varnish or lacquer. CASCO takes finishes well.

Overlays—Inlays

CASCO No. 2 White Glue mixed in standard proportions should be applied in a very thin film and allowed to become tacky before the overlay or inlay veneer is applied. In this way glue stain and cleaning up of excess glue is avoided. If any surplus glue is squeezed out of the joint it should be removed immediately with a damp cloth or allowed to remain until it becomes just firm (about one hour) when it can be removed easily with a putty knife without smearing.

BOOK ON VENEERING

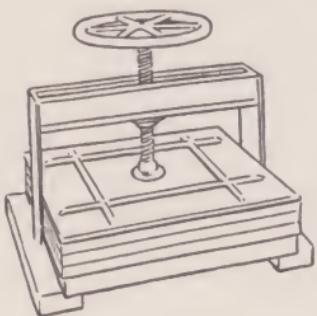


Complete veneering information is given in great detail in a book written by the well-known manual training and homecraft authority, Herman Hjorth, entitled, "How to Make Veneered Panels for the School and Home Workshop." This book tells in simple language the history of veneered furniture, how veneers are cut, how veneered panels are made, glued and finished. New edition (1937) containing considerable new material is complete in every way with 15 chapters, 96 pages, and 70 illustrations.

Also complete plans and directions for reproducing several new

interesting projects are included. Price 50c per copy postpaid. (See special offer, Page 34.)

STEEL VENEER PRESS



This all-steel press, of welded construction, is so designed that even pressure is transmitted to each corner of the platen surface. Adequate pressure for panels is applied by one man by means of the large wheel.

While the platen measures 24" x 24", panels up to 24" x 36" can be pressed by using

caul boards of 3/8" or greater thickness, extending beyond the edges of the panel, with "C" clamps applied every six inches.

SPECIFICATIONS:

Platen surface—24" x 24"

Opening between upper and lower platen—6 3/4"

Weight, uncrated—275 lbs.

Weight, crated—300 lbs.

Price—\$36 (Net) f.o.b. Greene, N. Y.

(Subject to change without notice)

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SPECIAL OFFER INTRODUCES VENEERING TO HOMECRAFTERS

VENEERING opens up a new world in Home-crafting of infinite variety. And it is not expensive, but really economical because the body of a beautifully veneered panel may be cheap, easily secured wood.

Hjorth's book "How to Make Veneered Panels" tells about fine veneers—how produced, etc.; about cutting and matching veneers to get any desired effect; about various glues; how to build the core; glue the crossband and the face veneers. It also includes several interesting projects. This book was first published and sold for \$1.00 a copy, but in response to popular demand, a new edition, exactly the same as the first except for the cover, has been published and sells for only 50c.

A new, practically stainfree glue has been produced for veneering, known as CASCO No. 2 White. It is slower setting and has the advantage of remaining liquid and at full strength overnight. An 8-oz. can is included in this Offer.

A special, stiff CASCO Glue Brush is also included.

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CASCO LIQUID CEMENT



NEW GENERAL PURPOSE FLEXIBLE ADHESIVE IN HANDY 25c TUBES; also, in $\frac{1}{2}$ pint, pint, quart, gallon, 5 gallon and 55 gallon drums. Combines strength of casein glue with liquid rubber. Dries tough; not hard—does not crystallize or crack loose. Clean to handle. Unexcelled for sticking dissimilar materials such as wood, paper, cloth, metal, leather, cork, glass, etc.

Use Casco Liquid Cement For:—

General Gluing—Repairing furniture and picture frames, laying linoleum, combining metal and wood, mounting photographs, bookbinding, sealing packages, attaching ribbons to Christmas packages, etc.

Labeling—Makes moisture-proof adhesive for labeling on glass, metal, wood, etc.

Tracing Designs for Piercing Copper, Brass, Pewter, etc.—School Crafts Club, N.Y.C., recommendation:

"Lay out design on tracing paper using hard pencil. Apply cement thin and evenly. Spread paper design on cemented metal. Rub paper gently until all bubbles and wrinkles have disappeared. Dry paper thoroughly. Metal is now ready for drilling, piercing and filing. The lines of the design are easily seen and the perfect adhesion of the paper to the metal makes for accurate following of the lines. After cutting, the paper is easily rolled off the metal. The cement can be rolled off the metal with the fingers without leaving scratches."



Advantages of Casco Liquid Cement:—

Unique—Remains permanently flexible, hence excellent for combining dissimilar materials which, under changes of temperature and humidity, have different rates of expansion and contraction.

Durable—Tough—heat resistant—moisture resistant.

Convenient—Rubs off hands; removed by washing with soap and water.

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Nut Bowl and Hammer
Fruit Bowl and Candy Dish

Wood Jewelry
Dutch Windmill
Portable Boat
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Governor Winthrop Desk
Corner Cabinet
Jewel Case and Tray
Pin Cushion and Darner
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Table Lamp—Floor Lamp
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